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EAGLEVILLE LAKE, TOLLAND COUNTY, CONNECTICUT

Pacific Northwest Environmental Research Laboratory

Prepared for:

National Environmental Research Center
Connecticut Department of Environmental Protection
Connecticut National Guard

January 1975

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16. ABSTRACT
Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivded according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

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REPORT
ON
EAGLEVILLE LAKE
TOLLAND COUNTY
CONNECTICUT

EPA REGION I

WORKING PAPER No. 179

WITH THE COOPERATION OF THE

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

AND THE

CONNECTICUT NATIONAL GUARD

JANUARY, 1975

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to fresh water lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the Connecticut Department of Environmental Protection for professional involvement and to the Connecticut National Guard for conducting the tributary sampling phase of the Survey.

John J. Curry, Director of the former Water Resources Commission; Roy B. Anderson, Principal Sanitary Engineer, and Steven Gerdsmeier, Sanitary Engineer, of the Water Compliance Unit, Department of Environmental Protection; and Sam Suffern, Assistant Director of Water and Related Resources, Department of Environmental Protection, provided invaluable lake documentation and counsel during the course of the Survey.

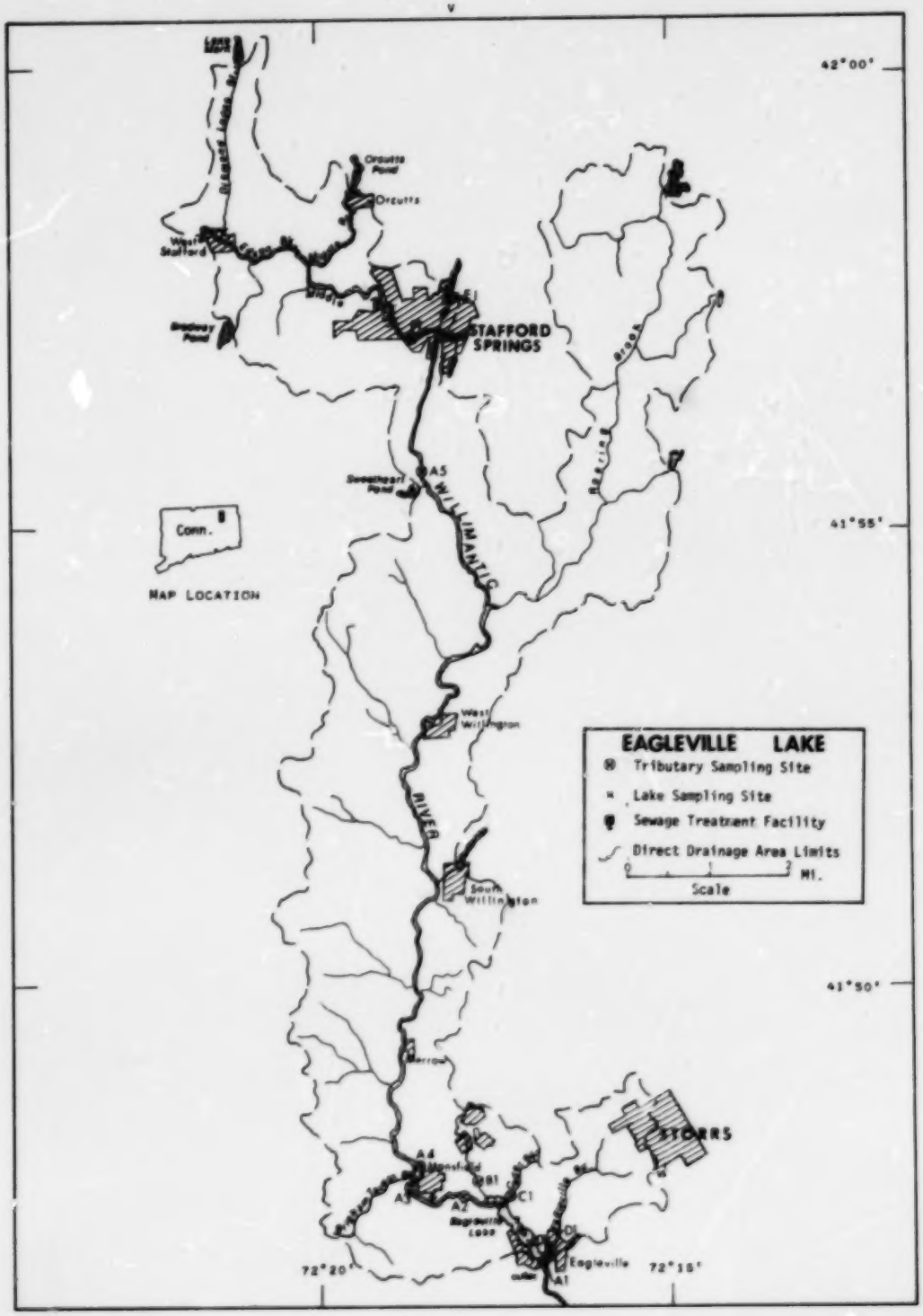
Major General John F. Freund, the Adjutant General of Connecticut, and Project Officer Lieutenant Colonel Daniel M. McGuire, who directed the volunteer efforts of the Connecticut National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF CONNECTICUT

LAKE NAME	COUNTY
Aspinook Pond	New London, Windham
Bantam	Litchfield
Community	New Haven
Eagleville	Tolland
Hanover Pond	New Haven
Housatonic Impoundments:	
Housatonic	Fairfield, New Haven
Lillinonah	Fairfield, Litchfield, New Haven
Zoar	Fairfield, New Haven


42°00'
41°55'
41°50'
72°20'
72°15'
STAFFORD SPRINGS
STORRS
Eagleville
Conn.
MAP LOCATION
A5
A4
A3
A2
A1
B1
C1
D1
EAGLEVILLE LAKE
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Direct Drainage Area Limits
0 1 2 MI.
Scale

EAGLEVILLE LAKE

STORET NO. 0904

I. CONCLUSIONS

A. Trophic Condition:

Eagleville Lake is eutrophic with humic, acid waters that are high in nutrients and support heavy growths of emergent and submergent vegetation and, reportedly, periodic algal blooms.

B. Rate Limiting Nutrient:

Algal assay results indicate that Eagleville Lake was nitrogen limited at the time the fall sample was collected. The lake data indicate nitrogen limitation in May also (the N/P ratio = 7/1) but phosphorus limitation in August (N/P = 15/1).

C. Nutrient Controllability:

1. Point sources--During the sampling year, Eagleville Lake received a total phosphorus load at a rate nearly 13 times the rate proposed by Vollenweider (in press) as dangerous; i.e., a eutrophic rate (see page 13). While Vollenweider's model may not be applicable to water bodies with a very short detention time, it is apparent that Eagleville Lake receives excessive nutrient loads.

It is calculated that the four point sources considered in this study contributed nearly 65% of the total phosphorus load. While even complete removal of phosphorus at the four sources would still leave a loading rate of more than four times Vollenweider's eutrophic

rate, it is likely that a high degree of removal would result in a significant improvement in the trophic condition of Eagleville Lake.

2. Non-point sources (see page 13)--The phosphorus exports of Cedar Brook, Eagleville Brook, and the unnamed brook (B-1) were very high during the sampling year as compared to the 85 lbs/m^2/yr export of an unimpacted tributary of Aspinook Pond* (Cory Brook). The cause of such high phosphorus exports is not apparent from the data and information available, and a need for further study is indicated.

In all, it is calculated that non-point sources contributed about 35% of the total phosphorus load to Eagleville Lake during the sampling year.

* Working Paper No. 176.

II. INTRODUCTION

Eagleville Lake is an impoundment of the Willimantic River which extends in a southeast-northwest direction through the townships of Coventry and Mansfield. Shoreline development is minimal. This small, shallow lake has very short hydraulic retention time; the Willimantic River represents the only significant flow input.

Recreational use is limited by access restrictions and frequent heavy algal blooms. Natural populations of largemouth bass, chain pickerel, yellow perch, sunfish, and golden shiners are maintained (Anonymous, 1959). Fishing probably represents the primary recreational use of the lake.

Much of the bottom is covered by muck from the decomposition of abundant emergent vegetation which is present over nearly 70 percent of the surface area of the lake. Periodic algal blooms also contribute to the muck layer.

III. LAKE AND DRAINAGE BASIN CHARACTERISTICS

A. Lake Morphometry†:

1. Surface area: 80 acres.
2. Mean depth: 3 feet.
3. Maximum depth: 10 feet.
4. Volume: 240 acre/feet.
5. Mean hydraulic retention time: 15 hours.

B. Tributary and Outlet:
(See Appendix A for flow data)

1. Tributaries -

Name	Drainage area*	Mean flow*
Willimantic River	101.0 mi^2	168.8 cfs
Unnamed Brook B-1	0.7 mi^2	1.3 cfs
Cedar Brook	5.1 mi^2	9.3 cfs
Eagleville Brook	2.3 mi^2	4.3 cfs
Minor tributaries & immediate drainage -	1.8 mi^2	3.8 cfs
Totals	110.9 mi^2	187.5 cfs

2. Outlet -

Willimantic River	111.0 mi^2**	187.5 cfs

C. Precipitation***:

1. Year of sampling: 64.6 inches.
2. Mean annual: 43.4 inches.

---

† Anonymous, 1972.

* Drainage areas are accurate within ±1%; gaged mean daily and mean monthly flows are accurate within ±10%; ungaged mean daily and mean monthly flows are accurate within ±20%; and normalized mean monthly flows are accurate within ±10% for gaged streams and within ±12% (high flow) to 27% (low flow) for ungaged streams.

** Includes area of lake.

*** See Working Paper No. 1, "Survey Methods".

IV. LAKE WATER QUALITY SUMMARY

Eagleville Lake was sampled three times during the open-water season of 1972 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from two depths at a single station (see map, page v). During each visit, a single depth-integrated (near bottom to surface) sample was obtained for phytoplankton identification and enumeration; and during the last visit, a single five-gallon depth-integrated sample was collected for algal assays. Also each time, a depth-integrated sample was collected for chlorophyll a analysis. The maximum depth sampled was 5 feet.

The results obtained are presented in full in Appendix B, and the data for the fall sampling period, when the lake essentially was well-mixed, are summarized below. Note, however, the Secchi disc summary is based on all values.

For differences in the various parameters at the other sampling times, refer to Appendix B.

A. Physical and chemical characteristics:

FALL VALUES

(10/08/72)

Parameter	Minimum	Mean	Median	Maximum
Temperature (Cent.)	15.6	15.6	15.6	15.6
Dissolved oxygen (mg/l)	8.0	8.0	8.0	8.0
Conductivity (μmhos)	80	80	80	80
pH (units)	6.6	6.7	6.7	6.8
Alkalinity (mg/l)	10	10	10	10
Total P (mg/l)	0.061	0.062	0.062	0.063
Dissolved P (mg/l)	0.028	0.028	0.028	0.029
NO_2 + NO_3 (mg/l)	0.230	0.230	0.230	0.230
Ammonia (mg/l)	0.130	0.135	0.135	0.140
		ALL VALUES		
Secchi disc (inches)	60	63	63	66

B. Biological characteristics:

1. Phytoplankton* -

Sampling Date	Dominant Genera	Number per ml
08/04/72	1. Flagellates	2,333
	2. Navicula	524
	3. Cryptomonas	398
	4. Dinobryon	344
	5. Cyclotella	253
	Other genera	687
	Total	4,539
10/08/72	1. Flagellates	829
	2. Cyclotella	584
	3. Nitzschia	433
	4. Navicula	433
	5. Asterionella	320
	Other genera	1,845
	Total	4,444

* The May sample was lost in shipment.

2. Chlorophyll a -
(Because of instrumentation problems during the 1972 sampling, the following values may be in error by plus or minus 20 percent.)

Sampling Date	Station Number	Chlorophyll a (µg/l)
05/29/72	01	2.4
08/04/72	01	13.6
10/08/72	01	5.7

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.034	0.330	7.2
0.006 P	0.040	0.330	7.4
0.012 P	0.046	0.330	7.6
0.024 P	0.058	0.330	7.4
0.060 P	0.094	0.330	7.8
0.060 P + 10.0 N	0.094	10.330	44.1
10.0 N	0.034	10.330	10.0

2. Discussion -

The control yield of the assay alga, Selenastrum capricornutum, indicates that the potential primary productivity of Eagleville Lake was high at the time the sample was collected. Also, the lack of response to increased levels of orthophosphorus, until nitrogen was also added, indicates the sample was nitrogen limited. Note that the addition of only nitrogen resulted in a relatively small but significant increase in yield. The lake data also indicate marginal nitrogen limitation at the time of sampling (the N/P ratio was a little less than 13/1).

The lake data indicate nitrogen limitation in May also (N/P = 7/1) but phosphorus limitation in August (N/P = 15/1).

D. Trophic Condition:

Survey data show that Eagleville Lake is eutrophic with humic-colored waters of moderate turbidity and high levels of inorganic nutrients.

Frequent algal blooms have been reported (Anonymous, 1972), although none were noted on the sampling dates of the Survey. Abundant emergent and submerged vegetation contribute to the deposits of muck which cover the sand and gravel bottom. The algal assay control yield and chlorophyll a concentrations support the high productive potential suggested.

V. NUTRIENT LOADINGS
(See Appendix C for all data)

For the determination of nutrient loadings, the Connecticut National Guard collected monthly near-surface grab samples from the tributary sites indicated on the map (page v), except for the high runoff months of March and May, and the colder months when low flows and ice cover prevented sampling at some of the stations. Sampling was begun in August, 1972, and was completed in October, 1973.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Connecticut District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loading*. However, the non-point (background) loads for the Willimantic River were estimated by using mean concentrations in the Middle River at station F-1 and the mean flow at station A-2.

Nutrient loadings for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated by using the means of the nutrient loads, in lbs/mi^2/year, in Eagleville Creek at station D-1 and multiplying the means by the ZZ area in mi^2.

The operators of the Stafford Springs and Mansfield Training School wastewater treatment plants provided monthly effluent samples and corresponding flow data. The unsampled Mansfield Depot loads were estimated

* See Working Paper No. 1.

at 2.5 lbs P and 7.5 lbs N/capita/year; and the untreated discharges from Willington local sewers were calculated at 3.5 lbs P and 9.4 lbs N/capita/year for an estimated population of 500 persons.

A. Waste Sources:

1. Known municipal† -

Name	Pop. Served	Treatment	Mean Flow (mgd)	Receiving Water
Stafford Springs	1,500	act. sludge + sand filters	2.004	Willimantic River
Mansfield Training School	500	trickling filter + sand filters	0.334	Willimantic River
Mansfield Depot	500	Unknown	0.050*	Willimantic River
Willington - local sewers	500	None	0.050*	Willimantic River

2. Known industrial - None

† Armet, 1973.
* Estimated at 100 gal/capita/day.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	lbs P/ yr	% of total
a. Tributaries (non-point load) -		
Willimantic River	8,310	21.5
Unnamed Brook (B-1)	510	1.3
Cedar Brook	3,220	8.3
Eagleville Brook	830	2.1
b. Minor tributaries & immediate drainage (non-point load) -	630	1.7
c. Known municipal -		
Stafford Springs	16,590	43.0
Mansfield Training School	5,490	14.2
Mansfield Depot	1,250	3.2
Willington	1,750	4.5
d. Septic tanks** -	30	0.1
e. Known industrial - None	-	-
f. Direct precipitation** -	10	<0.1
Total	38,600	100.0

2. Outputs -

Lake outlet - Willimantic River 30,470

3. Net annual P accumulation - 8,130 pounds

* Estimate based upon 50 lakeshore dwellings; see Working Paper No. 1.
** See Working Paper No. 1.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	lbs N/ yr	% of total
a. Tributaries (non-point load) -		
Willimantic River	337,950	61.2
Unnamed Brook (B-1)	4,520	0.8
Cedar Brook	32,200	5.8
Eagleville Brook	12,890	2.3
b. Minor tributaries & immediate drainage (non-point load) -	10,090	1.8
c. Known municipal -		
Stafford Springs	133,350	24.1
Mansfield Training School	11,950	2.2
Mansfield Depot	3,750	0.7
Willington	4,700	0.8
d. Septic tanks* -	1,180	0.2
e. Known industrial - None	-	-
f. Direct precipitation** -	770	0.1
Total	553,350	100.0

2. Outputs -

Lake outlet - Willimantic River 568,250

3. Net annual N loss - 14,900 pounds

* Estimate based upon 50 lakeshore dwellings; see Working Paper No. 1.
** See Working Paper No. 1.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

Tributary	lbs $P/mi^2/yr$	lbs $N/mi^2/yr$
Willimantic River*	82	3,346
Unnamed Brook (B-1)	729	6,457
Cedar Brook	631	6,314
Eagleville Brook	352	5,604

* Estimated.

E. Yearly Loading Rates:

In the following table, the existing phosphorus loading rates are compared to those proposed by Vollenweider (in press). Essentially, his "dangerous" rate is the rate at which the receiving water would become eutrophic or remain eutrophic; his "permissible" rate is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic rate would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with very short detention times.

Units	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
lbs/acre/yr	482.5	101.6	5,916.9	loss*
grams/m^2/yr	54.08	11.39	775.3	-

Vollenweider loading rates for phosphorus ($g/m^2/yr$) based on the surface area and medan outflow of Eagleville Lake:

"Dangerous" (eutrophic rate)	4.20
"Permissible" (oligotrophic rate)	2.10

* There was an apparent loss of nitrogen during the sampling year. This may have been due to nitrogen fixation in the lake, solubilization of previously sedimented nitrogen, recharge with nitrogen-rich ground water, unknown and unsampled point sources discharging directly to the lake, or underestimation of the nitrogen loads from Mansfield Depot and Willington. Whatever the cause, a similar nitrogen loss has occurred at Shagawa Lake, Minnesota, which has been intensively studied by EPA's National Eutrophication Research and Lake Restoration Branch.

VI. LITERATURE REVIEWED

Anonymous, 1959. A fishery survey of the lakes and ponds of Connecticut. Rept. No. 1, CT Bd. of Fish. & Game, Hartford.

Anonymous, 1972. Survey questionnaire. CT Dept. of Env. Prot., Hartford.

Armet, Brian W., 1973. Wastewater treatment plant questionnaires. CT Dept. of Env. Prot., Hartford.

Vollenweider, Richard A. (in press). Input-output models. Schweiz. Z. Hydrol.

VII. APPENDICES

APPENDIX A

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR CONNECTICUT 11/26/74

LAKE CODE 0904 EAGLEVILLE LAKE

TOTAL DRAINAGE AREA OF LAKE 111.00

TRIBUTARY	SUB-DRAINAGE AREA	NORMALIZED FLOWS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
0904A1	111.00	214.40	223.20	375.40	366.80	228.70	144.66	78.91	83.39	97.16	91.89	160.10	189.00	187.46
0904A2	101.00	192.00	199.00	335.00	331.00	207.00	135.00	74.00	76.00	91.00	82.00	140.00	167.00	168.78
0904B1	0.67	1.60	1.70	2.90	2.40	1.50	0.66	0.28	0.49	0.36	0.69	1.50	1.60	1.30
0904C1	5.10	11.00	12.00	20.00	14.00	11.00	4.90	2.60	3.70	3.20	4.90	9.80	11.00	9.32
0904D1	2.28	5.20	5.60	9.30	8.20	4.90	2.20	1.10	1.70	1.40	2.30	4.70	5.00	4.29
0904Z2	2.00	4.60	4.90	8.20	7.20	4.30	1.90	0.93	1.50	1.20	2.00	4.10	4.40	3.76

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 111.00
SUM OF SUB-DRAINAGE AREAS = 111.05

TOTAL FLOW IN = 2253.61
TOTAL FLOW OUT = 2253.61

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0904A1	8	72	93.00	19	99.00				
	9	72	70.00	15	79.00	24	53.00	28	49.00
	10	72	110.00	29	105.00				
	11	72	319.00	19	214.00				
	12	72	534.00	10	790.00				
	1	73	372.00						
	2	73	438.00	25	193.00				
	3	73	311.00	17	367.90	28	280.00		
	4	73	477.00	6	538.00	25	256.00	26	282.00
	5	73	290.00	6	236.00	12	449.00		
	6	73	143.00	24	124.00				
	7	73	131.00	21	112.00				
	8	73	45.40	18	40.00				
	9	73	94.00	15	92.00				
	10	73	42.00	13	40.00				
0904A2	8	72	85.00	19	90.00				
	9	72	66.00	15	74.00	24	50.00	28	46.00
	10	72	98.00	29	94.00				
	11	72	278.00	19	187.00				
	12	72	472.00	10	698.00				
	1	73	338.00						
	2	73	388.00	25	171.00				
	3	73	275.00	17	325.00	28	248.00		
	4	73	422.00	6	476.00	25	226.00	26	250.00
	5	73	256.00	6	208.00	12	397.00		
	6	73	130.00	24	113.00				
	7	73	119.00	21	102.00				
	8	73	41.00	18	36.00				
	9	73	86.00	15	84.00				
	10	73	38.00	13	36.00				

TRIBUTARY FLOW INFORMATION FOR CONNECTICUT 11/26/74

LAKE CODE 0904 EAGLEVILLE LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0904B1	8	72	0.55	19	0.58				
	9	72	0.26	15	0.29	24	0.20	28	0.18
	10	72	0.83	29	0.79				
	11	72	3.00	19	2.00				
	12	72	4.50	10	6.70				
	1	73	2.20						
	2	73	3.90	25	1.70				
	3	73	2.80	17	3.20	28	2.50		
	4	73	4.20	6	4.80	25	2.30	26	2.50
	5	73	2.60	6	2.10	12	4.80		
	6	73	0.90	24	0.70				
	7	73	0.80	21	0.70				
	8	73	0.30	18	0.20				
	9	73	0.60	15	0.60				
	10	73	0.20	13	0.20				
0904C1	8	72	4.10	19	4.40				
	9	72	2.30	15	2.60	24	1.80	28	1.60
	10	72	5.90	29	5.60				
	11	72	20.00	19	13.00				
	12	72	31.00	10	46.00				
	1	73	17.00						
	2	73	25.00	25	11.00				
	3	73	18.00	17	21.00	28	16.00		
	4	73	28.00	6	31.00	25	15.00	26	16.00
	5	73	17.00	6	14.00	12	26.00		
	6	73	6.60	24	5.70				
	7	73	6.00	21	5.10				
	8	73	2.10	18	1.80				
	9	73	4.30	15	4.20				
	10	73	1.90	13	1.80				
0904D1	8	72	1.90	19	2.00				
	9	72	1.00	15	1.10	24	0.77	28	0.71
	10	72	2.80	29	2.60				
	11	72	9.40	19	6.30				
	12	72	14.00	10	21.00				
	1	73	7.60						
	2	73	11.00	25	5.10				
	3	73	8.10	17	9.60	28	7.30		
	4	73	12.00	6	14.00	25	6.70	26	7.40
	5	73	7.60	6	6.20	12	12.00		
	6	73	2.90	24	2.50				
	7	73	2.70	21	2.30				
	8	73	0.90	18	0.80				
	9	73	1.90	15	1.90				
	10	73	0.90	13	0.80				

TRIBUTARY FLOW INFORMATION FOR CONNECTICUT 11/26/74

LAKE CODE 0904 EAGLEVILLE LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0904ZZ	8	72	1.70	19	1.80				
	9	72	0.87	15	1.00	24	0.66	28	0.61
	10	72	2.40	29	2.30				
	11	72	8.20	19	5.50				
	12	72	12.00	10	18.00				
	1	73	6.70						
	2	73	9.70	25	4.30				
	3	73	6.90	17	8.10	28	6.20		
	4	73	11.00	6	12.00	25	5.60	26	6.20
	5	73	6.40	6	5.20	12	9.90		
	6	73	2.60	24	2.20				
	7	73	2.40	21	2.10				
	8	73	0.80	18	0.70				
	9	73	1.70	15	1.70				
	10	73	0.70	13	0.70				

APPENDIX B

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 74/11/26

090401
41 47 00.0 072 17 00.0
EAGLEVILLE LAKE
09 CONNECTICUT

11EPALES 2111202
4 0010 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00630 NO2&NO3 N-TOTAL MG/L	00610 NH3-N TOTAL MG/L	00665 PHOS-TOT MG/L P	00666 PHOS-DIS MG/L P
72/05/29	10 50	0000	18.3	6.9	66	90	6.60	10K	0.220	0.290	0.092	0.031
	10 50	0005	16.9	7.3		90	6.40	10K	0.160	0.330	0.132	0.120
72/08/04	11 00	0000			60	92	6.40	11	0.460	0.280	0.098	0.049
	11 00	0004	21.8	5.4		93	6.30	13	0.440	0.320	0.096	0.052
72/10/08	18 15	0000				80	6.65	10K	0.230	0.140	0.063	0.029
	18 15	0004	15.6	8.0		80	6.75	10K	0.230	0.130	0.061	0.028

2

DATE FROM TO	TIME OF DAY	DEPTH FEET	32217 CHLRPHYL A UG/L
72/05/29	10 50	0000	2.4J
72/08/04	11 00	0000	13.6J
72/10/08	18 15	0000	5.7J

K VALUE KNOWN TO BE LESS THAN INDICATED

J VALUE KNOWN TO BE IN ERROR

APPENDIX C

TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 74/11/26

0904A1 LS0904A1
41 47 00.0 072 16 30.0
WILLIMANTIC RIVER
09 7.5 S COVENTRY
O/EAGLEVILLE LAKE
DAM ABOVE U O CT STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	10 40		0.500	1.900	0.190	0.052	0.095
72/09/29	09 45		0.447	1.100	0.253	0.035	0.105
72/10/29	09 30		0.473	1.780	0.435	0.042	0.128
72/11/19	14 35		0.310	0.670	0.058	0.018	0.050
72/12/10	09 50		0.200	1.400	0.038	0.005K	0.550
73/02/25	09 00		0.450	0.540	0.320	0.028	0.050
73/03/17	13 20		0.320	1.100	0.280	0.027	0.055
73/03/28	10 00		0.294	0.860	0.313	0.025	0.050
73/04/25	09 45		0.240	0.920	0.189	0.017	0.050
73/05/06	09 40		0.220	0.750	0.173	0.016	0.055
73/05/12	09 50		0.230	1.600	0.190	0.018	0.050
73/06/24	08 15		0.560	0.660	0.154	0.034	0.080
73/07/21	09 30		0.860	0.910	0.066	0.110	0.135
73/08/18	09 45		0.720	0.880	0.170	0.059	0.140
73/09/15	09 25		0.750	1.500	0.189	0.066	0.130

23

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

0904A2 LS0904A2
41 48 00.0 072 18 00.0
WILLIMANTIC RIVER
09 7.5 S COVENTRY
I/EAGLEVILLE LAKE
RIPLEY HILL RD BRDG BELOW MANSFIELD STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19			0.330	1.100	0.400	0.054	0.091
72/09/24	09 25		0.802	1.150	0.251	0.120	0.198
72/10/29	08 45		0.150	1.260	0.147	0.017	0.081
72/11/19	14 45		0.230	0.305	0.030	0.011	0.036
72/12/10	09 00		0.210	0.320	0.029	0.005K	0.017
73/02/25	09 45		0.350	0.340	0.189	0.010	0.035
73/03/17	14 20		0.260	0.700	0.350	0.022	0.045
73/03/28	09 20		0.294	1.380	0.315	0.039	0.060
73/04/25	10 30		0.231	0.960	0.170	0.019	0.055
73/05/06	10 20		0.231	1.640	0.147	0.014	0.060
73/05/12	10 30		0.220	0.760	0.160	0.028	0.040
73/06/24	08 15		0.770	?.310	0.650	0.048	0.120
73/07/21	09 20		1.160	0.935	0.200	0.079	0.168
73/08/18	08 30		0.800	1.150	0.069	0.115	0.155
73/10/13	10 15		0.180	0.650	0.220	0.015	0.090

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

0904A3 LS0904A3
41 48 00.0 072 19 00.0
WILLIMANTIC RIVER
09 7.5 S COVINGTON
T/EAGLEVILLE LAKE
US ALT 44 BRDG ABOVE MANSFIELD STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19			0.328	1.400	0.450	0.056	0.105
72/09/24	09 30		0.756	0.600	0.076	0.110	0.134
72/10/29	08 30		0.140	1.260	0.164	0.016	0.085
72/11/19	13 40		0.210	0.330	0.026	0.009	0.035
72/12/10	08 45		0.260	0.380	0.056		0.015
73/03/17	14 43		0.252	0.750	0.320	0.021	0.045
73/03/28	09 00		0.250		0.300	0.019	0.030
73/04/25	10 20		0.230	1.150	0.170	0.011	0.055
73/05/06	10 10		0.210	1.200	0.160	0.014	0.120
73/05/12	10 20		0.220	2.700	0.200	0.017	0.105
73/06/24	08 05		0.460	1.175	0.048	0.026	0.070
73/07/21	08 25		1.300	0.960	0.380	0.074	0.145
73/08/18	09 30		1.060	1.260	0.240	0.075	0.128
73/09/15	08 16		1.100	1.470	0.252	0.072	0.175
73/10/13	09 00		0.082	0.650	0.315	0.050	0.110

STORET RETRIEVAL DATE 74/11/26

0904A4 LS0904A4
41 48 00.0 072 18 30.0
WILLIMANTIC RIVER
09 7.5 S COVENTRY
T/EAGLEVILLE LAKE
ABOVE MANSFIELD STP NEAR STHOSP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	09 45		0.340	1.100	0.178	0.038	0.100
72/09/24	09 10		0.755	0.950	0.210	0.042	0.105
72/10/29	08 40		0.220	0.[illegible]	0.200	0.016	0.120
72/11/19	13 50		0.210	[illegible]	0.037	0.009	0.037
72/12/10	08 55		0.230	[illegible]	0.063	1.070	1.237
73/02/25	09 55		0.380	2.[illegible]	0.252	0.014	0.080
73/03/17	14 32		0.270	0.730	0.320	0.016	0.045
73/03/28	09 10		0.280	0.750	0.336	0.019	0.045
73/04/25	10 10		0.230	1.260	0.160	0.012	0.045
73/05/06	10 00		0.210	0.860	0.140	0.014	0.050
73/05/12	10 10		0.220	1.000	0.160	0.013	0.045
73/06/24	08 25		0.490	1.500	0.038	0.035	0.100
73/07/21	08 35		0.290	1.400	0.044	0.066	0.135
73/08/18	08 30		1.200	1.600	0.370	0.066	0.120
73/09/15	08 40		1.240	1.300	0.390	0.064	0.120
73/10/13	09 40		0.900	0.630	0.140	0.084	0.105

STORET RETRIEVAL DATE 74/11/26

0904A5 LS0904A5
41 56 00.0 072 18 30.0
WILLIMANTIC RIVER
09 7.5 STAFFORD SPR
T/EAGLEVILLE LAKE
ST HWY 32 BRDG BELOW STAFFORD SPR STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/09/24	09 15		0.347	1.000	0.175	0.017	0.088
72/11/19	12 45		0.190	0.500	0.110	0.025	0.075
73/01/22	16 15		0.260	1.000	0.420	0.036	0.102
73/03/17	13 30		0.220	0.940	0.310	0.020	0.045
73/05/17	17 00		0.140	1.470	0.570	0.042	0.080
73/07/29	20 00		1.600	3.700	2.000	0.480	0.660
73/08/19	07 45		0.580	2.500	0.980	0.154	0.300
73/09/05	09 30		1.420	5.500	3.300	0.580	0.810
73/09/17	07 45		0.590	2.200	0.940	0.160	0.310

STORET RETRIEVAL DATE 74/11/26

090481 LS0904A1
41 48 00.0 072 18 00.0
NO NAME
09 7.5 S COVENTRY
T/EAGLEVILLE LAKE
ST HWY 32 BRDG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	10 45		0.785	1.400	0.063	0.117	0.270
72/09/24			0.210	3.800	0.215	0.129	0.195
72/10/29	09 00		0.360	1.600	0.080	0.009	0.040
72/11/19	14 05		0.760	0.900	0.189	0.147	0.294
72/12/10	09 15		0.640	0.580	0.138	0.060	0.150
73/02/25	09 37		0.330	0.440	0.200	0.019	0.035
	10 03		0.930	1.890	0.730	0.273	0.370
73/03/17	14 10		0.640	1.800	0.077	0.060	0.840
73/03/28	09 30		0.620	0.540	0.023	0.048	0.080
73/04/06	09 50		0.440	0.890	0.033	0.030	0.060
73/04/26	10 00		0.470	0.640	0.020	0.026	0.065
73/05/12	10 00		0.430	0.720	0.029	0.027	0.060
73/06/24	08 40		0.840	1.500	0.120	0.090	0.155
73/07/21	09 00		0.390	0.730	0.078	0.063	0.200
73/08/18	09 05		0.280	1.470	0.120	0.060	0.190
73/09/15	08 45		0.273	1.200	0.034	0.066	0.180
73/10/13	09 50		0.640	0.880	0.058	0.240	0.250

STORET RETRIEVAL DATE 74/11/26

0904C1 LS0904C1
41 48 00.0 072 17 30.0
CEDAR BROOK
09 7.5 S COVENTRY
T/EAGLEVILLE LAKE
ST HWY 32 BRDG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19			0.560	1.200	0.395	0.078	0.086
72/09/24	09 35		0.532	1.450	0.153	0.034	0.069
72/10/29	09 10		0.210	1.320	0.069	0.008	0.036
72/11/19	14 15		0.317	0.390	0.036	0.009	0.024
72/12/10	09 25		0.420	5.300	0.160	1.060	1.265
73/02/25	09 25		0.360	0.950	0.100	0.086	0.185
73/03/17	13 50		0.470	0.170	0.037	0.011	0.011
73/03/28	09 38		0.320	0.390	0.029	0.010	0.015
73/04/06	09 20		0.231	1.400	0.069	0.014	0.057
73/04/25	09 25		0.230	0.840	0.022	0.009	0.080
73/05/12	09 30		0.230	2.800	0.071	0.016	0.240
73/06/24	08 50		0.640	0.750	0.029	0.039	0.080
73/07/21	09 10		0.530	1.760	0.180	0.037	0.200
73/08/18	09 15		0.370	1.380	0.061	0.054	0.165
73/09/15	08 45		0.380	1.700	0.064	0.060	0.175
73/10/13	10 00		0.220	1.320	0.046	0.049	0.160

STORET RETRIEVAL DATE 74/11/26

0904D1 LS0904D1
41 47 00.0 072 17 00.0
EAGLEVILLE BROOK
09 7.5 S COVINGTON
T/
NORTH EAGLEVILLE RD BRDG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19			0.510	1.400	0.260	0.023	0.042
72/09/24	09 40		0.907	0.400	0.066	0.029	0.050
72/11/19	14 27		0.960	0.210	0.025	0.026	0.039
72/12/10	09 40		0.970	0.450	0.150	0.080	0.105
73/02/25	09 12		1.120	0.420	0.300	0.070	0.095
73/03/17	13 32		0.520	0.960	0.120	0.023	0.230
73/03/28	09 49		1.100	0.750	0.120	0.088	0.110
73/04/06	09 30		0.610	0.520	0.035	0.048	0.075
73/04/25	09 35		0.640	1.470	0.072	0.042	0.120
73/05/12	09 40		0.600	0.480	0.028	0.046	0.080
73/06/24	09 05		0.470	0.400	0.027	0.038	0.060
73/07/21	08 40		0.470	1.800	0.190	0.038	0.135
73/08/18	08 45		0.500	0.900	0.105	0.020	0.110
73/09/15	08 25		0.520	1.400	0.115	0.028	0.120
73/10/13	09 25		0.390	1.200	0.110	0.031	0.095

STORET RETRIEVAL DATE 74/11/26

0904E1 LS0904E1
41 57 30.0 072 18 00.0
OUTLET OF WARR EN POND
09 7.5 STAFFORD SPR
T/EAGLEVILLE LAKE
IN STAFFORD SPRINGS ABOVE STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	13 45		0.200	0.860	0.231	0.009	0.029
72/09/23	08 35		0.238	1.550	0.280	0.005K	0.032
72/11/19	12 30		0.399	0.560	0.189	0.012	0.033
72/12/10	13 30		0.260	0.260	0.056	0.005K	0.015
73/01/22	16 30		0.330	0.580	0.290	0.005K	0.015
	16 45		0.200	0.280	0.027	0.005K	0.010
73/05/17	18 00		0.189	0.750	0.132	0.010	0.020
73/07/29	18 30		0.130	0.500	0.031	0.015	0.030
73/08/19	07 30		0.270	1.320	0.280	0.008	0.040
73/09/05	09 45		0.082	0.980	0.072	0.019	0.025
73/09/17	07 35		0.273	1.200	0.280	0.010	0.045

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

0904F1 LS0904F1
41 57 00.0 072 18 30.0
MIDDLE RIVER
09 7.5 STAFFORD SPR
T/EAGLEVILLE LAKE
TOLLAND AVE BRDG ABOVE STAFFORD SPR STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/09/23			0.247	0.600	0.179	0.005K	0.029
72/10/29	07 40		0.150	1.260	0.105	0.005K	0.024
72/11/19	12 20		0.120	0.260	0.022	0.006	0.013
73/03/17	13 00		0.150	0.580	0.033	0.007	0.015
73/05/17	17 45		0.088	1.390	0.031	0.007	0.015
73/07/29	20 30		0.140	0.580	0.026	0.010	0.040
73/08/19			0.110	0.860	0.065	0.005K	0.020
73/09/05	10 00		0.310	1.300	0.070	0.008	0.035
73/09/17	20 00		0.110	1.000	0.087	0.009	0.030

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/27

090450 SF090450 P001500
41 57 00.0 072 18 00.0
STAFFORD SPRINGS
09 7.5 STAFFORD SPR
T/EAGLEVILLE LAKE
WILLIMATIE RIVER
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/03/07	08 00								
CP(T)-			0.165	30.000	21.000	1.790	3.150	2.250	2.150
73/03/07	16 30								
73/04/09	07 00								
CP(T)-			0.399	22.000	9.900	1.700	3.000	2.500	2.500
73/04/09	15 00								
73/05/15			0.420	19.000	11.600	1.890	2.800		
73/07/05	08 00								
CP(T)-			6.300	4.000	1.600	1.700	2.100	1.500	2.100
73/07/05	16 00								
73/08/16	08 00								
CP(T)-			2.730	18.900	4.500	1.050	3.600	1.800	1.800
73/08/16	16 00								
73/09/18	08 00								
CP(T)-			4.500	13.200	11.100	1.040	1.700	1.990	1.800
73/09/18	16 00								
73/11/15	08 00								
CP(T)-			7.600	8.000	3.500	1.600	2.500	2.000	1.500
73/11/15	16 00								
74/01/15	08 00								
CP(T)-			2.240	13.000	7.000	1.240	2.200	2.400	2.100
74/01/15	16 00								
74/02/17	08 00								
CP(T)-			0.040	18.000	12.300	2.200	2.800	1.000	2.500
74/02/17	15 30								
74/03/15	08 00								
CP(T)-			0.200	17.000	14.300	0.160	2.100	2.000	1.600
74/03/15	15 00								
74/04/15	10 00								
CP(T)-			0.040	20.000	10.000	1.850	3.600	2.400	2.000
74/04/15	15 30								
74/05/16	08 00								
CP(T)-			1.160	39.000	14.000	0.930	1.850	2.100	2.000
74/05/16	16 00								
74/06/15	09 00								
CP(T)-			3.680	31.000	16.880	4.100	4.900	1.000	2.000
74/06/15	15 00								

STORET RETRIEVAL DATE 74/11/27

090451 SF090451 P000500
41 48 00.0 072 18 30.0
MANSFIELD
09 7.5 S COVENTRY
T/EAGLEVILLE LAKE
WILLIMANTIE RIVER
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/01/02	08 00								
CP(T)-			0.930	11.500	1.400	1.800	3.100	0.394	0.355
73/01/02	15 00								
73/02/06	09 10								
CP(T)-			0.430	6.500	1.370	3.700	4.300	0.489	0.391
73/02/06	14 20								
73/03/06	08 00								
CP(T)-			1.470	11.800	7.980	3.800	4.300	0.359	0.407
73/03/06	16 00								
73/04/06	08 00								
CP(T)-			0.760	16.100	6.200	3.600	5.000	0.410	0.421
73/04/06	15 00								
73/04/30	09 00								
CP(T)-			3.100	3.570	1.745	5.200	5.450	0.298	0.365
73/05/01	15 00								
73/06/05	09 00								
CP(T)-			3.260	20.000	3.180	7.530	7.900	0.289	0.310
73/06/05	15 00								
73/07/03	08 00								
CP(T)-			6.400	2.940	1.010	5.500	5.700	0.263	0.241
73/07/03	15 00								
73/08/07			5.500	1.030	0.280	3.300	7.300	0.225	0.381
73/09/04	10 30		9.400	0.620		5.520	5.900	0.225	0.300
73/10/02	10 30		3.900	7.000	3.400	7.200	10.500	0.235	0.300
73/11/06	14 10		9.300	0.700	0.300	4.900	5.200	0.230	0.220
73/12/05	11 00		0.440	15.000	5.000	6.200	7.200	0.232	0.300
74/01/21	10 00		1.920	8.900	2.400	2.240	3.500	0.500	0.350